

## **REMARKS**

Claims 1-21 are withdrawn as drawn to a non-elected invention. Claims 22-48 stand rejected in the Office Action. Applicants have canceled claims 1-21. Upon entry of the Amendment, claims 22-48 remain pending. Applicants respectfully request entry of the Amendment.

### **RESTRICTION Requirement**

Further to the restriction requirement and Applicants' election of group II with traverse, Applicants have canceled claims 1-21 as drawn to a non-elected invention. Applicants would like to thank the Examiner for examining groups II and III (i.e., claims 22-48) together.

### **CLAIM REJECTION UNDER U.S.C. § 102(B)**

Claim 22 is rejected under 35 U.S.C. § 102(b) as anticipated by the Matros reference (U.S. Pat. No. 6,314,722). Applicants respectfully traverse the rejection and request reconsideration.

For a rejection of claims under §102 over a reference, the reference must disclose each and every limitation of the claims. If any limitation of the claims is not disclosed in the reference, rejection under §102 is improper.

The Matros reference does not disclose the claim limitation of passing the gas composition comprising an alcohol over an oxidizing catalyst to produce a reducing gas. At column 5, lines 20-41 and column 7, line 4-14 cited by the Examiner, the Matros reference states that a hydrocarbon is subject to partial oxidation before

combining the partial oxidation product with the exhaust gas. To illustrate, the Matros reference states:

“When the catalyst is a lean-NO<sub>x</sub> catalyst and the chemical reductant is a hydrocarbon fuel, the hydrocarbon reductant can be preliminarily pretreated in a partial oxidation reactor to obtain mixtures of oxygenated organic compounds such as aldehydes....”  
Column 5, lines 31-35.

“Delivery system 30 can also include a partial oxidation reactor for converting hydrocarbon reductant to oxygenated organ compounds (i.e., aldehydes, alcohols, ketones and so on), which may be more effective with regard to NO<sub>x</sub> reduction over a particular lean-NO<sub>x</sub> catalyst.” Column 7, lines 5-10.

The above passages from the Matros reference indicate that it teaches partial oxidation of a hydrocarbon, not an alcohol as recited in the claims. Because the claim limitation of partially reducing an alcohol to an aldehyde or ketone is not disclosed in the reference, claim 22 is patentable over the reference. Accordingly, Applicants respectfully request the rejection of claim 22 under §102 be withdrawn.

The Matros reference fails to suggest the partial oxidation of an alcohol to supply a reductant for the NO<sub>x</sub>. Specifically, at lines 37-40 of column 5, the Matros reference states that oxygenated organic compounds such as acetaldehyde, formaldehyde, and acetone can be specially supplied and carried onboard the vehicle for admixture with the diesel exhaust gases. Thus, the only methods that the Matros reference teaches for production of oxygenated organic compounds such as aldehydes and ketones are partial oxidation of a hydrocarbon, or carrying the aldehydes onboard vehicle without generating them. For these reasons, Applicants respectfully submit it would not have been obvious to a person of skill in the art to modify the Matros

reference to arrive at the subject matter of claim 22. Thus, claim 1 is not only novel under §102, it is also non-obvious under §103.

### **Claim Rejections Under 35 U.S.C. § 103**

Claims 23-48 are rejected under 35 U.S.C. § 103 as unpatentable over the Matros reference in view of the Nakatsuji reference (U.S. Pat. No. 6,045,765). Applicants respectfully transverse the rejection and request reconsideration.

The Nakatsuji reference does not overcome the deficiencies of the Matros reference discussed above. The Nakatsuji reference discloses that a catalyst system containing silver aluminate and a transition element selected from W, Mo, and V is effective at reducing NO<sub>x</sub>. There is no disclosure in the Nakatsuji reference that teaches or suggests that such a catalyst is useful for the partial oxidation of alcohols to aldehydes or ketones. Further, there is no suggestion in the Nakatsuji reference to produce an aldehyde or ketone onboard a vehicle by partial oxidation of an alcohol such as ethanol to an aldehyde such as acetaldehyde. As such, the disclosure of the Nakatsuji reference cannot be combined with that of the Matros reference to suggest or arrive at the subject matter of any of the rejected claims. Accordingly, Applicants respectfully request the rejection of claims 23-48 under § 103 be withdrawn.

## CONCLUSION

For the reasons discussed above, Applicants believe that claims 22-48 are in a state of allowability and respectfully request an early notice of allowance. The Examiner is invited to telephone the undersigned Applicants' representative if that would be helpful to resolving any matter.

Respectfully submitted,

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